

OIPE

## RAW SEQUENCE LISTING

DATE: 08/02/2001

PATENT APPLICATION: US/09/912,020

TIME: 10:50:18

Input Set : A:\001dvl.txt

Output Set: N:\CRF3\08022001\I912020.raw

P.5

ENTERED

```

4 <110> APPLICANT: Zyskind, Judith
5      Ohlsen, Kari L.
6      Trawick, John
7      Forsyth, R. Allyn
8      Froelich, Jamie M.
9      Carr, Grant J.
10     Yamamoto, Robert T.
11     Xu, H. Howard
14 <120> TITLE OF INVENTION: GENES IDENTIFIED AS REQUIRED FOR PROLIFERATION IN
15     ESCHERICHIA COLI
17 <130> FILE REFERENCE: ELITRA.001DV1
C--> 19 <140> CURRENT APPLICATION NUMBER: US/09/912,020
C--> 19 <141> CURRENT FILING DATE: 2001-07-23
19 <150> PRIOR APPLICATION NUMBER: 09/492,709
21 <151> PRIOR FILING DATE: 2000-01-27
23 <150> PRIOR APPLICATION NUMBER: 60/117,405
25 <151> PRIOR FILING DATE: 1999-01-27
27 <160> NUMBER OF SEQ ID NOS: 485
29 <170> SOFTWARE: FastSEQ for Windows Version 3.0
31 <210> SEQ ID NO: 1
32 <211> LENGTH: 159
33 <212> TYPE: DNA
34 <213> ORGANISM: E. Coli
36 <400> SEQUENCE: 1
37   caggtggtat ggaaacccaa aatggagacg ggaagctgaa ccagatagtt actggaggtg      60
38   atcaccagca gatgaaataa cgataaccag aacaacgcct tatagcggtt agtttgcgag      120
39   aaaacgttca tattgtacct ttttgattaa ccattgggg      159
41 <210> SEQ ID NO: 2
42 <211> LENGTH: 696
43 <212> TYPE: DNA
44 <213> ORGANISM: E. Coli
46 <220> FEATURE:
47 <221> NAME/KEY: misc_feature
48 <222> LOCATION: (1)...(696)
49 <223> OTHER INFORMATION: n = A,T,C or G
51 <400> SEQUENCE: 2
52   gattacatca agcgcgcggt gggtttaccg ggcgataaag tcacttacga tccggtctca      60
53   aaagagctga cgattcaacc gggatgcagt tccggccagg cgtgtgaaaa cgcgctgccg      120
54   gtcacctact caaacgtgga accgagcgat ttcgttcaga cttctcacg ccgtaatggt      180
55   ggggaagcga ccagcggatt ctttgaagtg ccgaaaaacg aaaccaaaga aaatggaatt      240
56   cgtctttccg agcgtaaaga gacactgggt gatgtgacgc accgcattct gacagtgccg      300
57   attgcgcagg atcaggtggg gatgtattac cagcagccag ggcaacaact ggcaacctgg      360
58   attgttcctc cgggacaata cttcatgatg ggcgacaacc gcgacaacag cgcggacagc      420
W--> 59   cgttactggg gctttgtgcc ngaagcgaat ctggtcggtc nggcaacggc tatctggatg      480
W--> 60   aacttcgata accaagaagg cgaatggccg aatgggtctgc cctaantcgc attggcgnnt      540
W--> 61   ccnttaatan ccacttcctt cncctttgtcc ccttatggca acacttaatt tattntaaan      600
W--> 62   taatncccg tggctncaa atccccgcct tttnttaaaa atttcccna anttaaggtt      660

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```

W--> 63  ggccctccagt tgccccgnccc aaacactttg gncccc                696
65 <210> SEQ ID NO: 3
66 <211> LENGTH: 681
67 <212> TYPE: DNA
68 <213> ORGANISM: E. Coli
70 <220> FEATURE:
71 <221> NAME/KEY: misc_feature
72 <222> LOCATION: (1)...(681)
73 <223> OTHER INFORMATION: n = A,T,C or G
75 <400> SEQUENCE: 3
76  ctgcagggta atgtcgccat taaactggcg caggcagcca aagagttgct ccgcttctac        60
77  ccagtcggca gcgacaactt gcgttaaagt cgcaaaatta tcactgtcgtg          120
78  acgtaagcgg atggagtggc cggaaacctc atagtgaccg cccaccagtt ggccctgcac        180
79  gctttgtagc gtacgcgcgg cattggcaat aagattcaga tactcagact cttccggggc        240
80  cttcgccagc ataaaagagg aggatgctcg cgtatgcagc aactgctcca gcgcaaattg        300
81  cagccgcggg tgagtatcac tgaataaagg atcgttttcc tcaatcaaat gtggctgagc        360
82  aaatatttcc tgatagctat cggtatcagg aaccaggcca cgccatgcaa gtttcgtaat        420
W--> 83  ggtcaaagtt gatgtttttt agtctgttgt caaagccgcn attataccng taaccggcac        480
84  tacagcacac gtagaaagca cccgacaata ctcttgccat gggcggttaa gctcacagga        540
W--> 85  tggagatctt ttcttcaact gcctaaaaag ctgatattct gtaaagagtt acacngtaac        600
W--> 86  attgagatcg ctatgaaata tcaacaactt ggaaaatctt gnaaagcngg ttggaaaatg        660
87  gaaagtatct ggttaagaag c                                681
89 <210> SEQ ID NO: 4
90 <211> LENGTH: 289
91 <212> TYPE: DNA
92 <213> ORGANISM: E. Coli
94 <400> SEQUENCE: 4
95  ggcagaatth tacgtgacc aatgacgga cgacgtggca tggaaatact ccgttggtta        60
96  ttcaggattg tccaaaactc tacgagttta gtttgacatt taagttaaaa cgtttgacct        120
97  tacttaacgg agaaccatta agccttagga cgcttcacgc catacttga acgagcctgc        180
98  ttacggtctt taacgcggga gcagtcaagc gcaccacgta cgggtgtgga acgaacaccc        240
99  gggaggtctt taacacgacc gtcacggatc aggatcacgg agtgctcct          289
101 <210> SEQ ID NO: 5
102 <211> LENGTH: 815
103 <212> TYPE: DNA
104 <213> ORGANISM: E. Coli
106 <220> FEATURE:
107 <221> NAME/KEY: misc_feature
108 <222> LOCATION: (1)...(815)
109 <223> OTHER INFORMATION: n = A,T,C or G
111 <400> SEQUENCE: 5
112  gggagcttac atcagtaagt gaccgggatg agcagcgaa gataacgcat ctgcggcgcg        60
113  aaatatgaag ggggagagcc cttatagacc aggtagtaca cgtttggtta gggggcctgc        120
114  atatggcccc ctttttcaact tttatatctg tgcggtttta tgccgggcag atcacatctc        180
115  cgaggatttt agaattggtg aaattaccgc atccctggta aaagagctgc gtgagcgtac        240
116  tggcgcaggg atgatggatt gcaaaaaagc actgactgaa gctaaccggc acatcgagct        300
117  ggcaatcgaa aacatgcgta agtccggtgc tattaaagca gcgaaaaaag caggcaacgt        360
118  tgctgctgac ggcgtgatca aaacccaaat cgacggcaac tacggcatca ttctggaagt        420
119  taactgccag actgacttcg ttgcaaaaga cgctggtttc caggcgttcg cagacaaagt        480

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Input Set : A:\00ldv1.txt

Output Set: N:\CRF3\08022001\I912020.raw

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120 tctggacgca gctgttgctg gcaaaatcac tgacgttgaa gttctgaaag cacagttcga      540
121 agaagaacgt gttgcgctgg tagcgaaaat tggtgaaaac atcaacattc gccgcgttgc      600
122 tgcgctggaa ggcgacgttc tgggtttotta tcagcacggt gcgcgtatcg gccgtttctg      660
123 ttgctgctaa aagcgctgac gaagaactgg ttaaacacat cgttttgacc ttgtttgcaa      720
W--> 124 gccaaagccag aattcagaga aactttccgc ttcaccggag gtcccaccca cangganccc      780
W--> 125 cgattttntc agcatggtgg tcttcctncc gagttt      815
127 <210> SEQ ID NO: 6
128 <211> LENGTH: 403
129 <212> TYPE: DNA
130 <213> ORGANISM: E. Coli
132 <400> SEQUENCE: 6
133 caacactatt ttgttgaccg gaaaatggaa cactttccgc aatgcctggt gctatcacgc      60
134 ttaaaccatt tcattgcgat ttacacagaa cggacgtcct gtgcagtat attaatgtgt      120
135 cgatagaaac aagcattgaa aggcacagca gtagtcaaac agtgtgaaac gctactggcg      180
136 ccttacagcg caaaaaggct ggtgactaaa aagtcaccag ccatacgcct gattttctcag      240
137 gctgcaaccg gaagggttgg cttatttaac ttcaacttca gcgccagctt cttccagagc      300
138 ttttttcagt gcttctgcgt cgtctttgct caccgcttct ttcagagcag ccggtgcaga      360
139 ttctaccagg tcttttagctt ctttcagacc caggccagtt gcg      403
141 <210> SEQ ID NO: 7
142 <211> LENGTH: 149
143 <212> TYPE: DNA
144 <213> ORGANISM: E. Coli
146 <400> SEQUENCE: 7
147 gagctttttt cagtgttctt gcgtcgtctt tgctcacgcc ttctttcaga gcagccggtg      60
148 cagattctac caggtcttta gcttctttca gaccagggcc agttgcgcca cgtactgctt      120
149 tgataacagc aactttgtta gcgccagca      149
151 <210> SEQ ID NO: 8
152 <211> LENGTH: 742
153 <212> TYPE: DNA
154 <213> ORGANISM: E. Coli
156 <220> FEATURE:
157 <221> NAME/KEY: misc_feature
158 <222> LOCATION: (1)...(742)
159 <223> OTHER INFORMATION: n = A,T,C or G
161 <400> SEQUENCE: 8
162 ccatctgtcc attgagcgga cagtttgtgc aacactatth ttgttgaccgg aaaatggaac      60
163 actttccgca atgcctggtg ctatcacgct taaaccatth cattgcgatt tacacagaac      120
164 ggacgtcctg tcgcagtata ttaagtcgtc gatagaaaca agcattgaaa ggcacagcag      180
165 tagtcaaaca gtgtgaaacg ctactggcgc cttacagcgc aaaaaggctg gtgactaaaa      240
166 agtcaccagc catcagcctg atttctcagg ctgcaaccgg aagggttggc ttatttaact      300
167 tcaacttcag cgccagcttc ttccagagct tttttcagtg cttctgcgtc gtctttgctc      360
168 acgccttctt tcagagcagc cgggtgcagat tctaccaggt ctttagcttc ttccagaccc      420
169 aggccagttg cgccacgtac tgctttgata acagcaactt tgttagcgcc agcagctttc      480
W--> 170 agaattacgt cgaattcagt tntttcttca gcagcttcaa ccgggccagc agctacagct      540
171 acagcagcag caagcggaaa caccgaatth ttcttccatt gcagagatca gttctacaac      600
172 cgtccattac agacatagct gcaactgctt caatgattth gatctttagt ggatagacat      660
W--> 173 ttaaattgth cctgaattat caagaaataa gtnttatacg taagccgaaa tgcgttaaaa      720
W--> 174 aagataactg ngattaaagc ag      742
176 <210> SEQ ID NO: 9

```

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```

177 <211> LENGTH: 421
178 <212> TYPE: DNA
179 <213> ORGANISM: E. Coli
181 <400> SEQUENCE: 9
182 agtagtcaaa cagtgtgaaa cgctactggc gccttacagc gcaaaaaggc tgggtgactaa      60
183 aaagtcacca gccatcagcc tgattttctca ggctgcaacc ggaaggggtg gcttatttaa      120
184 cttcaacttc agcgccagct tttccagag cttttttcag tgctttctgcg tegtctttgc      180
185 tcacgccttc tttcagagca gccggtgcag attctaccag gtcttttagct tctttcagac      240
186 ccaggccagt tgcgccacgt actgctttga taacagcaac tttgtttagcg ccagcagctt      300
187 tcagaattac gtcgaattca gttttttctt cagcagcttc aaccgggcca gcagctacag      360
188 ctacagcagc agcagcggaa acaccgaatt tttcttccat tgcagagatc agttctacaa      420
189 c                                                                                   421
191 <210> SEQ ID NO: 10
192 <211> LENGTH: 126
193 <212> TYPE: DNA
194 <213> ORGANISM: E. Coli
196 <400> SEQUENCE: 10
197 agagcttttt tcagtgtctt tgcgtcgtct ttgctcacgc cttctttcag agcagccggt      60
198 gcagattcta ccaggctctt agcttctttc agaccaggc cagttgcgcc acgtactgct      120
199 ttgata                                                                                   126
201 <210> SEQ ID NO: 11
202 <211> LENGTH: 262
203 <212> TYPE: DNA
204 <213> ORGANISM: E. Coli
206 <220> FEATURE:
207 <221> NAME/KEY: misc_feature
208 <222> LOCATION: (1)...(262)
209 <223> OTHER INFORMATION: n = A,T,C or G
211 <400> SEQUENCE: 11
212 ctgcaaccgg aagggttggc ttatttaact tcaacttcag cgccagcttc ttccagagct      60
W--> 213 tttttcagtg cttctgcgtc gtctttgctc acgccttctt tcagagcagc cgntgcagat      120
214 tctaccaggt ctttagcttc tttcagaccc aggccagttg cgccacgtac tgctttgata      180
215 acagcaactt tgtagcgcc agcagctttc agaattacgt cgaattcagt tttttcttca      240
216 gcagcttcaa ccgggcccagc ag                                                                                   262
218 <210> SEQ ID NO: 12
219 <211> LENGTH: 202
220 <212> TYPE: DNA
221 <213> ORGANISM: E. Coli
223 <220> FEATURE:
224 <221> NAME/KEY: misc_feature
225 <222> LOCATION: (1)...(202)
226 <223> OTHER INFORMATION: n = A,T,C or G
228 <400> SEQUENCE: 12
229 gcgcataccc tgcagcatcg gcccgatgga gatcaggctg gcagaacgct gtaccgcttt      60
W--> 230 gtaggtggtg ttaccggtgn tcagatccgg gaagatgaac acggtagcgc gacctgcaac      120
W--> 231 cggagagttc ggcgcttttg attnecgaac gtcagccatt accgcagcgt cgtactgcag      180
232 cggaccggcg atcatcaggt ca                                                                                   202
234 <210> SEQ ID NO: 13
235 <211> LENGTH: 261

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```

236 <212> TYPE: DNA
237 <213> ORGANISM: E. Coli
239 <400> SEQUENCE: 13
240 tctaggagta agaatagctt caaattcagc agttgacagt ggcataaacg taactgggtga      60
241 cttttgcccc gcatgacgcc gggctttttt tattattccg tgacttccag cgtagtgaag      120
242 gcaaacttct cgccatcaaa tagccctga ctgggttagtt ttagcgcggg gatcactggc      180
243 agagaaagaa acgccatctg aataaacggc tcatcgggta acggaccgca ttcacgggcg      240
244 gcgcttttca aggcgtcaat t                                     261
246 <210> SEQ ID NO: 14
247 <211> LENGTH: 224
248 <212> TYPE: DNA
249 <213> ORGANISM: E. Coli
251 <400> SEQUENCE: 14
252 ttcttttttt cgtcaacggt gtccagaatc attttattta cctcggggta cttatgctga      60
253 tttttattat tatggggaag gtgttattta tgagtttcat ttatgccgta acgacaatga      120
254 actcggaat tagtataagc agcgcgagaa taataatcat tgtgcaaatg ctaatttaat      180
255 taatactatt taaatattat tttgagcata tgcacataag gttg                                     224
257 <210> SEQ ID NO: 15
258 <211> LENGTH: 232
259 <212> TYPE: DNA
260 <213> ORGANISM: E. Coli
262 <400> SEQUENCE: 15
263 aattcccttc tttttttogt caacggtgtc cagaatcatt ttatttacct cgggtactta      60
264 tgctgatttt tattattatg gggaagggtg ttttatgag ttccatttat gccgtaacga      120
265 caatgaactc gggaattagt ataagcagcg cgagaataat aatcattgtg caaatgctaa      180
266 ttttaattaat actattttaa tattattttg agcatatgca cataagggtg gg                                     232
268 <210> SEQ ID NO: 16
269 <211> LENGTH: 212
270 <212> TYPE: DNA
271 <213> ORGANISM: E. Coli
273 <400> SEQUENCE: 16
274 aatagcgggt atgcacgctt ttcttttttt cgtcaacggt gtccagaatc attttattta      60
275 cctcggttac ttatgctgat ttttattatt atggggaagg tgttatttat gagtttcatt      120
276 tatgccgtaa cgacaatgaa ctcggaatt agtataagca gcgcgagaat aataatcatt      180
277 gtgcaaatgc taatttaatt aatactattt aa                                     212
279 <210> SEQ ID NO: 17
280 <211> LENGTH: 433
281 <212> TYPE: DNA
282 <213> ORGANISM: E. Coli
284 <400> SEQUENCE: 17
285 ccttgtaaat tatcgcccggt ggcataaaaa ctgcgtccaa acgccgtctt tgccagcagc      60
286 caggccataa atgccaccag aattatcgtc aaccaaccaa ttgctgaaac gccaagcagc      120
287 agcggggcgg agagctgttt cagttcggcg ggtaaccctt caatccattt gccgccagtc      180
288 cacagcaaca tgatgcctct gtacaaccct aacgtgccaa ggggtggcaac aatggcaggg      240
289 atcttttagcc acgcgaccag gacaccgttg aaaaatcccg cgagcaaacc aagcagtaaa      300
290 gtcgcgacac aagcaacagg tagtgaatat cctgcgttca gtaacatccc caacagcacc      360
291 gcgcacattc cggtaatcga acccaactgaa acatcaatat tgcgcgtaag cattaccagc      420
292 gtcgcgcccc ttg                                     433
294 <210> SEQ ID NO: 18

```

Use of n and/or Xaa has been detected in the Sequence Listing.  
 Review the Sequence Listing to insure a corresponding  
 explanation is presented in the <220> to <223> fields of  
 each sequence using n or Xaa.

## VERIFICATION SUMMARY

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Input Set : A:\001dvl.txt

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L:19 M:270 C: Current Application Number differs, Replaced Current Application No  
L:19 M:271 C: Current Filing Date differs, Replaced Current Filing Date  
L:59 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2  
L:60 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2  
L:61 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2  
L:62 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2  
L:63 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2  
L:83 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3  
L:85 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3  
L:86 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3  
L:124 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5  
L:125 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5  
L:170 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8  
L:173 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8  
L:174 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8  
L:213 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11  
L:230 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12  
L:231 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12  
L:330 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19  
L:378 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22  
L:379 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22  
L:380 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22  
L:381 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22  
L:382 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22  
L:383 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22  
L:427 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:25  
L:428 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:25  
L:441 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:26  
L:490 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28  
L:516 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29  
L:567 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:32  
L:568 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:32  
L:601 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:34  
L:602 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:34  
L:677 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:39  
L:681 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:39  
L:720 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42  
L:721 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42  
L:722 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42  
L:723 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42  
L:724 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42  
L:725 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42  
L:726 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42  
L:727 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42  
L:728 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42  
L:729 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42  
L:730 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42  
L:731 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42

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L:760 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:44

L:781 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45

L:782 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45

L:783 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45

L:12516 M:220 C: Keyword misspelled or invalid format, &lt;213&gt; ORGANISM for SEQ ID#:403

L:12527 M:220 C: Keyword misspelled or invalid format, &lt;213&gt; ORGANISM for SEQ ID#:404